

## Dividing Whole Numbers by Fractions

Dividing by a fraction is the same as multiplying by its **reciprocal**.

Reciprocals are numbers whose numerators and denominators have been switched. When two numbers are reciprocals, their product is 1.

For example,  $\frac{2}{3}$  and  $\frac{3}{2}$  are reciprocals because  $\frac{2}{3} \times \frac{3}{2}$  is 1.

Study these whole numbers to learn how to divide by fractions.

$$8 \div 4 = 2$$

$$8 \times \frac{1}{4} = 2$$

4 and  $\frac{1}{4}$  are reciprocals.

$$7 \div 8 = \frac{7}{8}$$

$$7 \times \frac{1}{8} = \frac{7}{8}$$

8 and  $\frac{1}{8}$  are reciprocals.

### Example

Divide:  $4 \div \frac{3}{8}$ .

Write 4 as an improper fraction.

Multiply by the reciprocal of  $\frac{3}{8}$ .

The reciprocal of  $\frac{3}{8}$  is  $\frac{8}{3}$ .

Simplify.

So,  $4 \div \frac{3}{8} = 10\frac{2}{3}$ .

$$4 \div \frac{3}{8} = \frac{4}{1} \times \frac{8}{3} = \frac{32}{3} = 10\frac{2}{3}$$

### Try It

a. Divide:  $21 \div \frac{4}{3}$ .

Improper  
fraction

Reciprocal

Multiply. \_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_ = \_\_\_\_\_

b. Divide:  $10 \div \frac{4}{3}$ .

Improper  
fraction

Reciprocal

Multiply. \_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_ = \_\_\_\_\_ = \_\_\_\_\_

Divide.

c.  $3 \div \frac{3}{7}$  \_\_\_\_\_

d.  $6 \div \frac{2}{5}$  \_\_\_\_\_

e.  $8 \div \frac{6}{7}$  \_\_\_\_\_

f.  $20 \div \frac{3}{5}$  \_\_\_\_\_

g.  $4 \div \frac{5}{6}$  \_\_\_\_\_

h.  $25 \div \frac{5}{8}$  \_\_\_\_\_

i.  $12 \div \frac{2}{3}$  \_\_\_\_\_

j.  $16 \div \frac{4}{9}$  \_\_\_\_\_